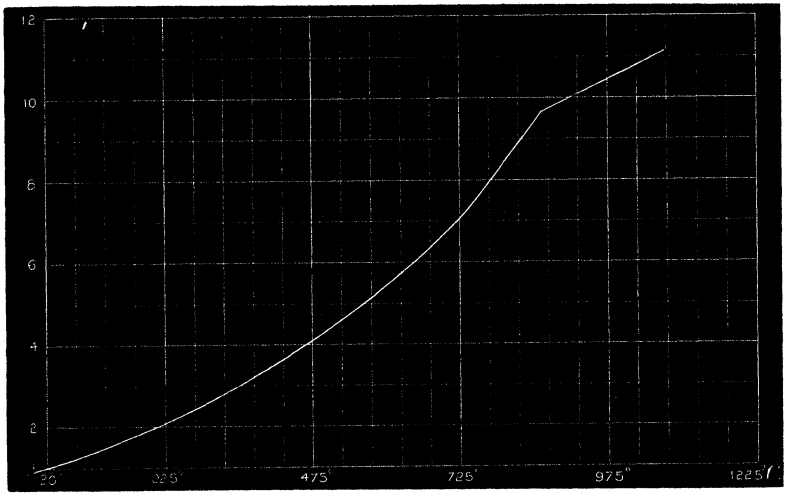
quantity of heat liberated. The dotted lines in the curve show the continuation of the first and second parts of the curve, the horizontal distance between these approximately represents the time during which the material was giving out heat without fall of temperature. After the bend in the curve the temperature is falling at the rate of 0·21° C. per second. The distance between the two curves is 810 seconds. It follows that the heat liberated in recalescence of this sample is 173 times the heat liberated when the iron falls in temperature 1° C. With the same sample I have also observed an ascending curve of temperature. There is in this case no reduction of temperature at the point of recalescence, but there is a very substantial reduction in the rate at which the temperature rises.

V. "Electrical Resistance of Iron at a High Temperature." By J. Hopkinson. Received March 14, 1889.

Auerbach, Callendar, and I think also Tait, have observed that the temperature coefficient of electrical resistance of iron is abnormally high. So far as I know no one has pushed his observations to the temperature at which iron ceases to be magnetic.



The accompanying curve shows the results of experiments made upon a very soft iron wire. The abscissæ are the temperatures as estimated by the resistance of a copper wire, the ordinates represent the resistance of the iron wire having unit resistance at 20° C. In

will be seen that the temperature coefficient of iron ranges from 0·0048 at the ordinary temperature to 0·018 at a temperature just short of 855° C.; it then suddenly changes to about 0·0067. The last coefficient can only be regarded as a somewhat rough estimate.

This temperature being a higher temperature than I had observed previously in any case as the temperature at which a sample of iron ceases to be magnetic, it appeared desirable to ascertain whether the iron wire differed from other samples in this respect. A ring was formed of the wire, and was wound with a primary and secondary coil, and the resistance of the secondary was determined when the magnetisability of the iron disappeared. It was found that this resistance was the resistance which corresponded to a temperature of 870° C.; this temperature agrees with that at which the discontinuity in the resistance curve occurs, within the limits of errors of observation.

Presents, March 21, 1889.

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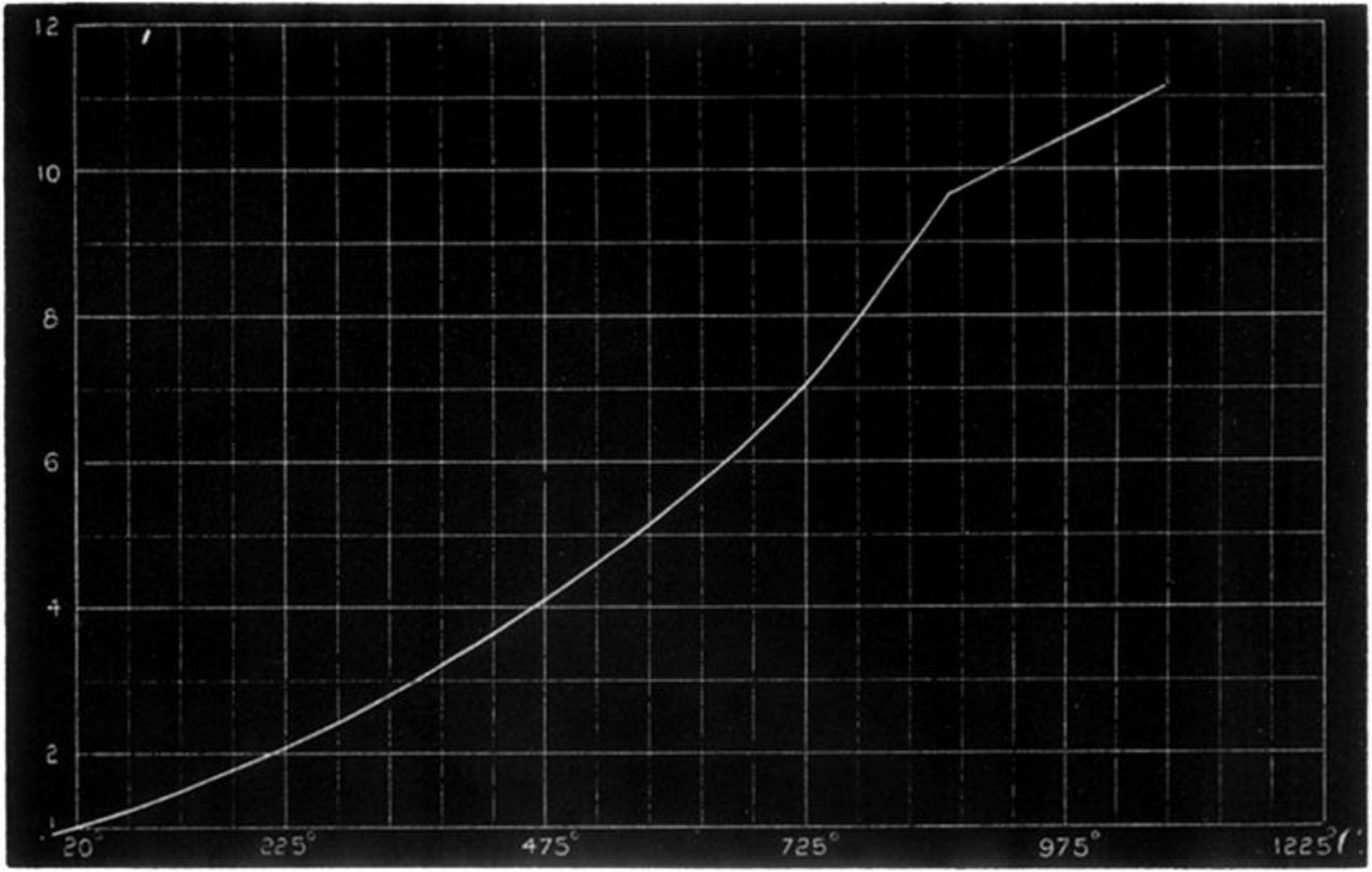
12
10
8
6
4
2
1
20°
225°
475°
725°
975°
1225°